

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference FIN 506 PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/DE2004/001360	International filing date (day/month/year) 28.06.2004	Priority date (day/month/year) 28.07.2003
International Patent Classification (IPC) or national classification and IPC H01L23/538, H01L21/60		
Applicant INFINEON TECHNOLOGIES AG		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows: <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:
 - ☐ international search (Rule 12.3 and 23.1(b))
 - ☐ publication of the international application (Rule 12.4)
 - ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
 - ☐ the international application as originally filed/furnished
 - ☒ the description:
 - pages 1-13 _____ as originally filed/furnished
 - pages* _____ received by this Authority on _____
 - pages* _____ received by this Authority on _____
 - ☒ the claims:
 - nos. 1-6 _____ as originally filed/furnished
 - nos.* _____ as amended (together with any statement) under Article 19
 - nos.* _____ received by this Authority on _____
 - nos.* _____ received by this Authority on _____
 - ☒ the drawings:
 - sheets 1/3-3/3 _____ as originally filed/furnished
 - sheets* _____ received by this Authority on _____
 - sheets* _____ received by this Authority on _____
 - ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages _____
 - ☐ the claims, nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages _____
 - ☐ the claims, nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (*specify*): _____
 - ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	1-6	YES
	Claims		NO
Inventive step (IS)	Claims	1-6	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-6	YES
	Claims		NO
2. Citations and explanations (Rule 70.7)			
1. This report makes reference to the following documents:			
D1: EP-A-0 273 703 (GEN ELECTRIC), 6 July 1988 (1988-07-06)			
D2: US-A-3 650 796 (BUSH ERIC LANGLEY ET AL), 21 March 1972 (1972-03-21)			
D3: EP-A-0 465 138 (GEN ELECTRIC), 8 January 1992 (1992-01-08)			
2. Claim 2 is unclear (PCT Article 6) because, although it describes the optical detection of semiconductor chip positioning errors, it does not indicate when, how and for what it is used.			
3. The present application appears to meet the requirements of PCT Article 33(2) for novelty and of PCT Article 33(3) for inventive step:			
3.1 The application relates to processes for providing interconnections on panels with chip arrays, as described in independent claims 1 and 2.			

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
3.2	<p>The advantage of the invention is that, in spite of unavoidable chip positioning errors, the outer contacts are arranged in a totally uniform manner at the expected positions. This is achieved by defining the outer contacts separately (together with large part of the connection lines in claim 2) with a photolithographic mask which extends over the entire panel. The connection lines (or their ends in claim 2) are then successively defined by means of a second photolithographic mask having a uniform pattern (by means of short individual laser lithography in claim 2), taking into account the previously sensed chip positioning errors. Another advantage of the invention is that inaccuracies during the production of the connection lines between the chips and outer contact surfaces can be kept small. This is the result of the elimination (to a large extent, in claim 2) of direct laser structuring of the connection lines (position-dependent guidance of the lithographic laser).</p>
3.3	<p>The closest prior art, document D1 (see claims 1 and 10) discloses a process for providing interconnections on panels having semiconductor chips arranged in rows and columns (see figure 7). The interconnection lines between the individual chips are adapted during their production to previously sensed chip positioning errors. The interconnection lines are produced entirely by direct laser structuring. D1 does not mention the use of a photolithographic mask for defining outer</p>

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
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contact surfaces, and even leads a person skilled in the art away from the elimination or reduction of laser lithography by the use of photolithographic masks (see D1, page 5, lines 58-60).

3.4 Document D2 (see the entire document) describes the production of photolithographic masks. Since D1 (see page 5, lines 58-60) discourages the use of photolithographic masks, a person skilled in the art would have no reason to combine D1 with D2 in whatever form.

3.5 Document D3 only gives general background information.

4. Consequently, the dependent claims also meet the requirements of PCT Article 33(2) and 33(3).